

## Simplifying Rational Expressions

Main Idea :  $a, b, c$  represent rational expressions

$$\frac{\cancel{x}}{\cancel{x}} = 1$$

$$\frac{a \cdot \cancel{x}}{b \cdot \cancel{x}} = \frac{a}{b}$$

Example :

$$a^2 - b^2 = (a+b)(a-b)$$

$$x^2 - 2x - 15$$

$$x^2 - 9$$

$$(x-5)(x+3)$$

$$(x+3)(x-3)$$

$$\frac{x-5}{x-3}$$

$$\frac{x^2 - 2x - 3}{x^2 - x - 6} = \frac{(x-3)(x+1)}{(x+2)(x-3)} =$$

$$\frac{x+1}{x+2}$$

$$\frac{4}{x(x+2)} = \text{simplified form}$$

$$\frac{4x^2}{(20x^2 - 12x)} = \frac{\cancel{4}x^2}{\cancel{4}x(5x - 3)}$$

$$\frac{x^2}{x} = \frac{x \cdot \cancel{x}}{\cancel{x}}$$